

**CLAIMS**

1. A nasal delivery device for delivering substance to a nasal airway of a subject, comprising:
  - 5 an interface unit, as a replaceable unit, including at least one nosepiece unit for fitting to a respective nostril of a subject and including a nozzle from which substance is in use delivered, and at least one delivery unit including a substance supply unit for delivering substance to the nozzle of the at least one nosepiece unit; and
  - 10 an actuation unit for actuating the at least one delivery unit of the interface unit.
2. The delivery device of claim 1, wherein the interface unit comprises a disposable unit.
- 15 3. The delivery device of claim 1 or 2, wherein the interface unit comprises a single integral unit.
4. The delivery device of any of claims 1 to 3, wherein the interface unit is packaged in protective packaging.
- 20 5. The delivery device of any of claims 1 to 4, comprising:  
a plurality of interface units attached to a belt such as to allow for successive attachment of the interface units to the actuation unit.
- 25 6. The delivery device of claim 5, wherein the actuation unit is configured successively to provide the interface units thereto through use of the belt as a guide.
7. The delivery device of any of claims 1 to 6, wherein the substance supply unit  
30 comprises a substance pump unit for delivering substance, the substance pump unit including a chamber containing substance and a piston member which is movable in the chamber to deliver a flow of substance from the chamber.

8. The delivery device of claim 7, wherein the substance comprises a liquid.
9. The delivery device of claim 7, wherein the substance comprises a powder.
- 5 10. The delivery device of any of claims 1 to 9, wherein the interface unit includes a mouthpiece unit including a mouthpiece into which the subject in use exhales.
- 10 11. The delivery device of claim 10, wherein the mouthpiece is fluidly connected to the at least one nosepiece unit such as to provide an air flow therethrough on exhalation by a subject into the mouthpiece.
12. The delivery device of any of claims 1 to 11, wherein the at least one delivery unit includes a gas supply unit for supplying a gas flow through the at least one  
15 nosepiece unit.
13. The delivery device of claim 12, wherein the gas supply unit comprises a gas pump unit for delivering a gas flow, the gas pump unit comprising a cylinder and a piston member which is movable in the cylinder to deliver a gas flow through  
20 the at least one nosepiece unit.
14. The delivery device of claim 12 or 13, wherein the at least one delivery unit is configured such that the gas supply unit initiates supply of a gas flow prior to actuation of the substance supply unit to deliver substance.  
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15. The delivery device of any of claims 1 to 11, wherein the actuation unit includes a gas supply unit for supplying a gas flow through the at least one nosepiece unit.
16. The delivery device of claim 15, wherein the actuation unit is configured such  
30 that the gas supply unit initiates supply of a gas flow prior to actuation of the substance supply unit to deliver substance.

17. The delivery device of any of claims 1 to 16, wherein the at least one delivery unit is actuated in response to exhalation by the subject.
- 5 18. The delivery device of claim 17, wherein the actuation unit includes a detection unit for detecting exhalation by the subject, at least one drive unit for actuating the at least one delivery unit, and a control unit for actuating the at least one drive unit in response to detecting exhalation by the subject.
- 10 19. The delivery device of claim 18, wherein the detection unit includes a pressure sensor for detecting a pressure in the mouthpiece, and the control unit is configured to actuate the at least one drive unit in response to detection of a predeterminable pressure by the detection unit.
- 15 20. The delivery device of claim 18, wherein the detection unit includes a flow sensor for detecting a flow rate through the mouthpiece, and the control unit is configured to actuate the at least one drive unit in response to detection of a predeterminable flow rate by the detection unit.
- 20 21. The delivery device of claim 17, wherein the actuation unit includes at least one drive unit for actuating the at least one delivery unit, and a trigger mechanism for actuating the at least one drive unit in response to exhalation by the subject into the mouthpiece.
- 25 22. The delivery device of claim 21, wherein the trigger mechanism is configured to actuate the at least one drive unit in response to generation of a predeterminable pressure in the mouthpiece.
- 30 23. The delivery device of claim 21, wherein the trigger mechanism is configured to actuate the at least one drive unit in response to detection of a predeterminable flow rate through the mouthpiece.

24. The delivery device of any of claims 1 to 23, wherein the interface unit includes first and second nosepiece units for fitting to respective nostrils of the subject, and first and second delivery units, each including a substance supply unit for delivering substance through the respective nosepiece unit.
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25. The delivery device of claim 24, wherein the actuation unit is configured to actuate the first and second delivery units in succession such that substance is first delivered into one nasal cavity and subsequently into the other nasal cavity.
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26. A method of delivering substance to a nasal airway of a subject, comprising the steps of:  
providing an interface unit, as a replaceable unit, to an actuation unit, the interface unit including at least one nosepiece unit for fitting to a respective nostril of a subject and including a nozzle from which substance is delivered, and  
15 at least one delivery unit including a substance supply unit for delivering substance to the nozzle of the at least one nosepiece unit, and the actuation unit being configured to actuate the at least one delivery unit of the interface unit;  
fitting the interface unit to a subject; and  
actuating the actuation unit to actuate the at least one delivery unit such as to  
20 deliver substance to a nasal airway of the subject.
27. The method of claim 26, wherein the interface unit comprises a disposable unit.
28. The method of claim 26 or 27, wherein the interface unit comprises a single  
25 integral unit.
29. The method of any of claims 26 to 28, wherein the interface unit is packaged in protective packaging, and, prior to the fitting step, further comprising the step of:  
opening the protective packaging.
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30. The method of any of claims 26 to 29, wherein a plurality of interface units are attached to a belt, and, in the interface unit providing step, a subsequent one of the interface units is provided to the actuation unit.
- 5 31. The method of claim 30, wherein, in the interface unit providing step, the actuation unit advances the belt of interface units such as to provide a subsequent one of the interface units thereto.
- 10 32. The method of any of claims 26 to 31, wherein the substance supply unit comprises a substance pump unit for delivering substance, and the substance pump unit includes a chamber containing substance and a piston member which is moved in the chamber to deliver a flow of substance from the chamber.
- 15 33. The method of claim 32, wherein the substance comprises a liquid.
34. The method of claim 32, wherein the substance comprises a powder.
- 20 35. The method of any of claims 26 to 34, wherein the interface unit includes a mouthpiece unit including a mouthpiece, and, prior to the actuating unit actuating step, further comprising the step of:  
the subject exhaling into the mouthpiece.
- 25 36. The method of claim 35, wherein the mouthpiece is fluidly connected to the at least one nosepiece unit such as to provide an air flow therethrough on exhalation by the subject into the mouthpiece.
- 30 37. The method of any of claims 26 to 36, wherein the at least one delivery unit includes a gas supply unit for supplying a gas flow, and further comprising the step of:  
actuating the gas supply unit to supply a gas flow through the at least one nosepiece unit.

38. The method of claim 37, wherein the gas supply unit comprises a gas pump unit for delivering a gas flow, and the gas pump unit comprises a cylinder and a piston member which is moved in the cylinder to deliver a gas flow through the at least one nosepiece unit.
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39. The method of claim 37 or 38, wherein, for each delivery unit, the supply of a gas flow is initiated prior to the delivery of substance.
40. The method of any of claims 26 to 36, wherein the actuation unit includes a gas supply unit for supplying a gas flow, and further comprising the step of:
- 10 actuating the gas supply unit to supply a gas flow through the at least one nosepiece unit.
41. The method of claim 40, wherein, for each delivery unit, the supply of a gas flow
- 15 is initiated prior to the delivery of substance.
42. The method of any of claims 26 to 41, wherein the at least one delivery unit is actuated in response to exhalation by the subject.
- 20 43. The method of claim 42, wherein the actuation unit includes a detection unit for detecting exhalation by the subject and at least one drive unit for actuating the at least one delivery unit; and the actuation unit actuating step comprises the step of:
- 25 actuating the at least one drive unit in response to the detection unit detecting exhalation by the subject.
44. The method of claim 43, wherein the detection unit includes a pressure sensor for detecting a pressure in the mouthpiece, and the at least one drive unit is actuated in response to detection of a predeterminable pressure by the detection unit.
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45. The method of claim 43, wherein the detection unit includes a flow sensor for detecting a flow rate through the mouthpiece, and the at least one drive unit is

actuated in response to detection of a predeterminable flow rate by the detection unit.

- 5 46. The method of claim 42, wherein the actuation unit includes at least one drive unit for actuating the at least one delivery unit and a trigger mechanism for actuating the at least one drive unit in response to exhalation by the subject; and the actuation unit actuating step comprises the step of:  
actuating the trigger mechanism to actuate the at least one drive unit in response to exhalation by the subject.
- 10 47. The method of claim 46, wherein the trigger mechanism is configured to actuate the at least one drive unit in response to generation of a predeterminable pressure in the mouthpiece.
- 15 48. The method of claim 46, wherein the trigger mechanism is configured to actuate the at least one drive unit in response to detection of a predeterminable flow rate through the mouthpiece.
- 20 49. The method of any of claims 26 to 48, wherein the interface unit includes first and second nosepiece units for fitting to respective nostrils of the subject, and first and second delivery units, each including a substance supply unit for delivering substance through the respective nosepiece unit, and the actuation unit actuating step comprises the step of:  
actuating the actuation unit to actuate the first and second delivery units such as  
25 to deliver substance to the respective nasal cavities of the subject.
- 30 50. The method of claim 49, wherein the first and second delivery units are actuated in succession such that substance is first delivered into one nasal cavity and subsequently into the other nasal cavity.
51. The method of any of claims 26 to 50, where the method is for the mass treatment of subjects, in particular the mass vaccination of subjects.

52. A nasal delivery component, as a disposable component, comprising: at least one  
nosepiece unit for fitting to a respective nostril of a subject and including a  
nozzle from which substance is in use delivered; and at least one delivery unit  
including a substance supply unit for delivering substance to the nozzle of the at  
least one nosepiece unit.
53. The delivery component of claim 52, wherein the delivery component is an  
interface unit for attachment to an actuation unit utilized in actuating the at least  
one delivery unit.
54. The delivery component of claim 53, wherein a plurality of delivery units are  
attached to a belt such as to allow for successive attachment to the actuation unit.
55. The delivery component of claim 53 or 54, wherein the at least one delivery unit  
is manually actuatable absent an actuation unit.
56. The delivery component of any of claims 52 to 55, wherein the delivery  
component is packaged in protective packaging.
57. The delivery component of any of claims 52 to 56, wherein the substance supply  
unit comprises a substance pump unit for delivering substance, the substance  
pump unit including a chamber containing substance and a piston member which  
is movable in the chamber to deliver a flow of substance from the chamber.
58. The delivery component of claim 57, wherein the substance is a liquid.
59. The delivery component of claim 57, wherein the substance is a powder.
60. The delivery component of any of claims 52 to 59, further comprising a  
mouthpiece unit including a mouthpiece into which the subject in use exhales.



61. The delivery component of claim 60, wherein the mouthpiece is fluidly connected to the at least one nosepiece unit such as to provide an air flow therethrough on exhalation by the subject into the mouthpiece.
- 5 62. The delivery component of any of claims 52 to 61, wherein the at least one delivery unit includes a gas supply unit for supplying a gas flow through the at least one nosepiece unit.
- 10 63. The delivery component of claim 62, wherein the gas supply unit comprises a gas pump unit for delivering a gas flow, the gas pump unit including a cylinder and a piston member which is movable in the cylinder to deliver a gas flow through the respective nosepiece unit.
- 15 64. The delivery component of claim 63, wherein the at least one delivery unit is configured such that the gas supply unit initiates supply of a gas flow prior to the substance supply unit delivering substance.
- 20 65. The delivery component of any of claims 52 to 64, comprising first and second nosepiece units for fitting to respective nostrils of the subject, and first and second delivery units, each for delivering substance through a respective one of the first and second nosepiece units.
- 25 66. The delivery component of claim 65, where configured such as to be separable between the first and second nosepiece units, and thereby provide two delivery units which are each separably operable.
- 30 67. An actuation unit for receiving and actuating an interface unit, as a replaceable unit, to deliver substance to a nasal airway of a subject, the interface unit including: at least one nosepiece unit for fitting to a respective nostril of a subject and including a nozzle from which substance is in use delivered; and at least one delivery unit including a substance supply unit for delivering substance to the nozzle of the at least one nosepiece unit, the actuation unit comprising:

at least one drive unit for actuating the at least one delivery unit of the interface unit.

- 5 68. The actuation unit of claim 67, wherein the interface unit includes a mouthpiece unit including a mouthpiece into which the subject in use exhales.
69. The actuation unit of claim 68, wherein the mouthpiece is fluidly connected to the at least one nosepiece unit such as to provide an air flow therethrough on exhalation by the subject into the mouthpiece.
- 10 70. The actuation unit of claim 68 or 69, further comprising:  
a detection unit for detecting exhalation by a subject into the mouthpiece; and  
a control unit for actuating the at least one drive unit in response to detecting exhalation by the subject.
- 15 71. The actuation unit of claim 70, wherein the detection unit includes a pressure sensor for detecting a pressure in the mouthpiece, and the control unit is configured to actuate the at least one drive unit in response to detection of a predeterminable pressure by the detection unit.
- 20 72. The actuation unit of claim 70, wherein the detection unit includes a flow sensor for detecting a flow rate through the mouthpiece, and the control unit is configured to actuate the at least one drive unit in response to detection of a predeterminable flow rate by the detection unit.
- 25 73. The actuation unit of claim 68 or 69, further comprising:  
a trigger mechanism for actuating the at least one delivery unit in response to exhalation by the subject into the mouthpiece.
- 30 74. The actuation unit of claim 73, wherein the trigger mechanism is configured to actuate the at least one drive unit in response to generation of a predeterminable pressure in the mouthpiece.

75. The actuation unit of claim 73, wherein the trigger mechanism is configured to actuate the at least one drive unit in response to detection of a predeterminable flow rate through the mouthpiece.
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76. The actuation unit of any of claims 67 to 75, wherein the at least one delivery unit includes a gas supply unit for supplying a gas flow through a respective nosepiece unit.
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77. The actuation unit of any of claims 67 to 75, further comprising:  
a gas supply unit for supplying a gas flow through the at least one nosepiece unit.
78. The actuation unit of any of claims 67 to 77, wherein a plurality of interface units are attached to a belt, and the actuation unit is configured to advance the belt  
15 such as successively to provide interface units thereto.
79. The actuation unit of claim 78, wherein the belt to which the interface units are attached is utilized as a guide.
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80. The actuation unit of any of claims 67 to 79, wherein the interface unit includes first and second nosepiece units for fitting to respective nostrils of a subject, and first and second delivery units, each for delivering substance through respective ones of the first and second nosepiece units, and further comprising:  
first and second drive units for actuating respective ones of the delivery units of  
25 the interface unit.
81. The actuation unit of claim 80, wherein the first and second drive units are configured to actuate the substance supply units in succession, and thereby deliver substance first into one nasal cavity and subsequently into the other nasal  
30 cavity.

82. A nasal delivery device for delivering substance to a nasal airway of a subject substantially as hereinbefore described with reference to Figures 2 to 5 or Figures 8 to 12, optionally in conjunction with Figures 6 and 7, of the accompanying drawings.
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83. A method of delivering substance to a nasal airway of a subject substantially as hereinbefore described with reference to Figures 2 to 5 or Figures 8 to 12, optionally in conjunction with Figures 6 and 7, of the accompanying drawings.
- 10 84. A nasal delivery component substantially as hereinbefore described with reference to Figures 2 to 5 or Figures 8 to 12, optionally in conjunction with Figures 6 and 7, of the accompanying drawings.
- 15 85. An actuation unit for receiving and actuating an interface unit to deliver substance to a nasal airway of a subject substantially as hereinbefore described with reference to Figures 2 to 5 or Figures 8 to 12, optionally in conjunction with Figures 6 and 7, of the accompanying drawings.